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United States
Department of
Agriculture

Soil
Conservation
Service



Idaho

Basin Outlook Report

April 1, 1993



Basin Outlook Reports

and Federal - State - Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

Your local Soil Conservation Service Office

or

Soil Conservation Service

Snow Surveys

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How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

IDAHO WATER SUPPLY OUTLOOK REPORT

APRIL 1, 1993

SUMMARY

Water users in southern Idaho can expect one of the best water supplies of the last six years. For the first time since 1989, snowpacks are near average throughout much of central and southern Idaho. Water supply prospects in northern Idaho are a different story: three consecutive dry months have reduced snowpacks to well below normal levels. Streamflow forecasts call for near to slightly below normal runoff for most streams in the central and southern mountains, but well below normal amounts for northern Idaho streams. Rivers throughout the state began rising in mid March due to low elevation snowmelt and rainfall, with some local flooding reported. Reservoirs are still low throughout the state, but are beginning to fill as inflows increase. In spite of the optimistic outlook, water users are cautioned that one wet year will not negate the effects of six years of drought. Prudent use of water resources will help improve reservoir carryover storage at the end of the irrigation season.

SNOWPACK

Heavy precipitation in late March and early April continued to build the snowpack in the higher elevations of central and southern Idaho. Low elevation snowpacks, however, decreased significantly during the month due to warm temperatures and heavy rains. As a result, most basin snowpack indices decreased slightly from the figures reported last month. Northern Idaho snowpacks dropped 5-10 percentage points. The west central mountains dropped about 5 points, while the Salmon and upper Snake basins reported no appreciable change. The low elevation drainages south of the Snake River lost considerable snowpack in late March when warm temperatures accompanied by rainfall caused high runoff and localized flooding. Snowpacks are currently 60-80% of average in northern Idaho, 90-110% in the central mountains, 80-95% in eastern Idaho and the upper Snake basin, and 80-120% along the southern border of the state. Three consecutive dry months have taken their toll on snowpacks in northern Idaho: snowpacks are now well below normal, quite similar to last year at this time.

PRECIPITATION

The first two weeks of March were very dry throughout Idaho. Then the skies opened up in the middle of the month, and most stations received more than their normal monthly complement in the last half of March. This precipitation continued into early April. The only part of the state where precipitation was below average was north Idaho, where the Panhandle and Clearwater River basins received around 85% of average. Elsewhere, precipitation was above average, ranging from 124% in the Salmon basin to 148% for basins south of the Snake River. The upper Snake basin in Wyoming reported 105% of normal for March. Temperatures during March were slightly below normal for southern Idaho, with Boise reporting a departure of 0.7 degrees below the norm. Temperatures were above normal in the north, with Lewiston reporting 2.3 degrees above the average. The National Weather Service's 30-day outlook for April calls for near to slightly above average precipitation for Idaho. Temperatures are expected to be near normal, in the northwest portions of the state, and slightly above normal in the southeast.

RESERVOIRS

Warm temperatures and heavy rainfall in late March raised streams in central and southern Idaho, and many reservoirs improved storage during the month. Of special note is Owyhee Reservoir, which was nearly empty last month and almost filled in a three week period as the result of an extreme rain on snow event. Elsewhere, reservoir storage remains below average. Current streamflow forecasts indicate the Payette system will fill to capacity this year. The Boise and Snake system are not forecast to completely fill, but an adequate irrigation supply is expected. Water supplies should be adequate in Magic and Mackay Reservoirs as well. Water users should keep in touch with their local irrigation districts for more specific information. Note: SCS reports reservoir information in terms of useable volumes, which includes both active, inactive, and (in some cases) dead storage. Other operators may report reservoir contents in different terms.

STREAMFLOW

Warm temperatures, rain and snowmelt caused abundant runoff in the lower elevation basins throughout Idaho in March. In fact, March was the first month in several years that flows were above average in many central and southern Idaho streams. Flooding was reported along the Weiser and Owyhee Rivers. The Owyhee River near Rome, Oregon recorded a new record peak discharge over 50,000 cubic feet per second. This early runoff has improved storage in most reservoirs. With high mountain snowpacks still increasing in most areas, the outlook for the April-July runoff season remains optimistic for central and southern Idaho. Streamflow forecasts call for 75 to 90% of average runoff in the Salmon, Bear and upper Snake River basins, and 80 to 100% for the remainder of the central mountains and basins south of the Snake River. Northern Idaho streams, with well below normal snowpacks, are expected to yield less than 70% of normal runoff.

RECREATION OUTLOOK

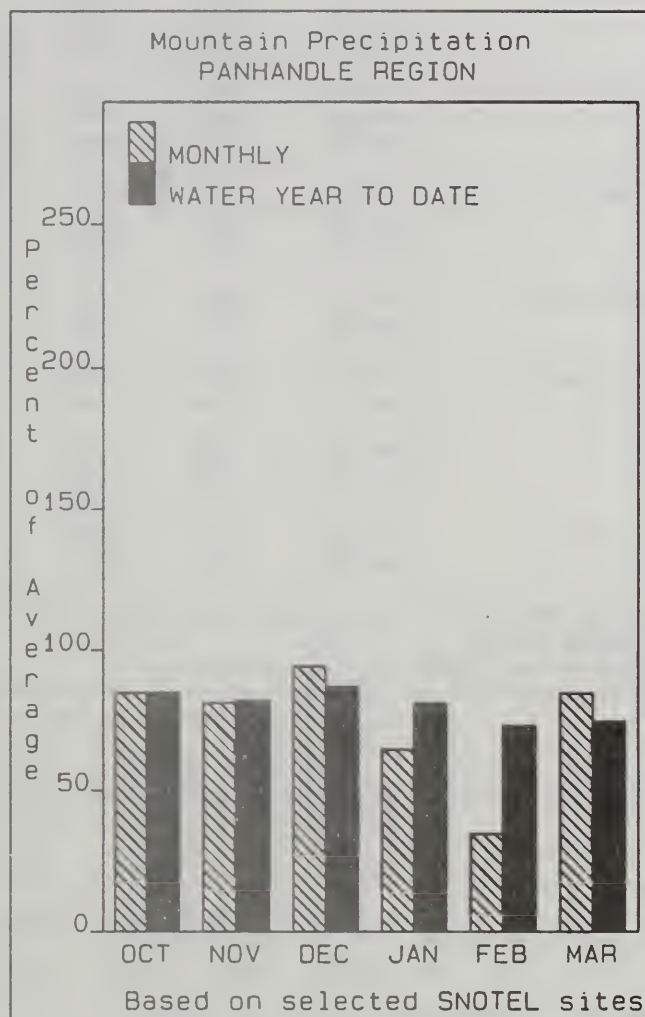
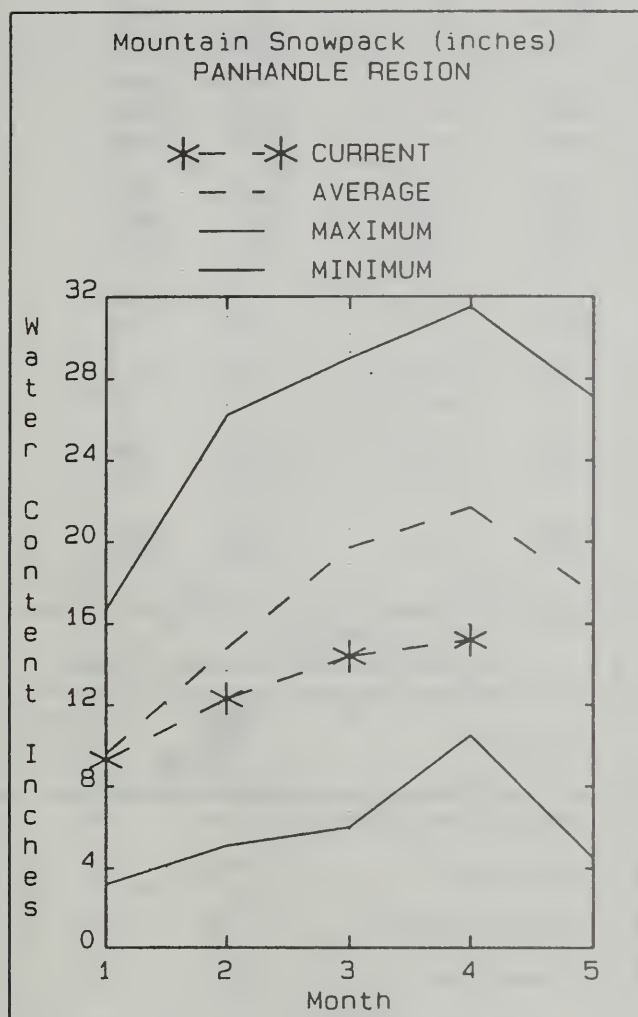
Whitewater enthusiasts are excited about the prospects of a good runoff year for central and southern Idaho rivers. With some of the best snowpacks in the last six years, streamflows should be adequate throughout the summer for river running on most central Idaho rivers. The desert rivers of southwestern Idaho -- the Jarbidge, Bruneau, and Owyhee -- should have an excellent early spring boating season. The Salmon basin is reporting a snowpack slightly below normal, but significantly better than last year. Northern Idaho streams have had three dry months in a row, and snowpacks are well below average there. The boating season will most likely be short in that part of the state. Good reservoir storage in the Payette basin promises a long season for the North Fork, South Fork, and Main Payette Rivers. Lucky Peak is expected to have a full season... Memorial Day through Labor Day. Reservoir and river users alike should find 1993 a definite improvement over the previous few years.

OTHER INFORMATION

The SNOTEL data collection system is entering the final phase of an extensive upgrade which began in 1987. This activity will culminate this spring and summer with the replacement of the two master stations and the Portland central computer, and the upgrade of all remote site transceivers. Beginning the week of May 10th, the Boise master station will be shut down and retrofitted, leaving the Ogden master station to carry the system load through part of the summer. No more than a two to three percent drop in site reporting response is expected, and the entire process should be nearly transparent to most SNOTEL data users. By the end of the summer of 1993, both master stations, the Portland central computer, and all remote sites will be replaced or upgraded. The benefits of this activity include improved equipment reliability, additional sensor capability, and improved system flexibility. For more information, contact the Soil Conservation Service Snow Survey office in Boise at (208) 334-1614.

PANHANDLE REGION

APRIL 1, 1993



WATER SUPPLY OUTLOOK

The Idaho Panhandle has received less than normal precipitation each month this water year. March precipitation was 85% of average, bringing the water year total to 75% of average. Snowpack percentages decreased slightly in the higher elevations during March, while the lower elevations lost a considerable amount of snow. Overall, the snowpack is around 70% of average, about the same as April 1 of last year. Streamflow forecasts call for well below average runoff for all forecast points in this area. Streams flowing into Idaho from Montana and Canada are also expected to be well below normal this summer. Coeur d'Alene Lake currently reports 95% of useable capacity while Priest Lake reports 45%. Unless the spring and summer are unusually wet, water supplies could be tight again this year. Water users should be prepared for low flows to occur earlier than usual in rivers in the area.

PANHANDLE REGION
Streamflow Forecasts - April 1, 1993

Forecast Point	Forecast Period	<===== Drier ===== Future Conditions ===== Wetter =====>						30-Yr Avg. (1000AF)
		=====		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
KOOTENAI at Leonia (1,2)	APR-JUN	2720	3480	3820	67	4170	4920	5701
	APR-JUL	3460	4400	4830	67	5260	6200	7199
	APR-SEP	3970	5060	5550	67	6040	7130	8275
CLARK FK at Whitehorse Rpds (1,2)	APR-JUN	4370	5790	6430	64	7070	8490	10050
	APR-JUL	5080	6740	7490	64	8240	9900	11730
	APR-SEP	5590	7410	8240	64	9070	10900	12910
PEND OREILLE LAKE inflow (1,2)	APR-JUN	4680	6400	7180	63	7960	9680	11390
	APR-JUL	5640	7460	8290	63	9120	10900	13150
	APR-SEP	6160	8150	9060	63	9970	12000	14370
PRIEST nr Priest River (1,2)	APR-JUL	350	490	555	68	620	760	814
	APR-SEP	370	520	590	68	660	810	868
COEUR D'ALENE at Enaville (1)	APR-JUL	275	435	510	66	585	745	769
	APR-SEP	290	460	535	66	610	780	809
ST. JOE at Calder	APR-JUL	655	740	795	68	850	935	1169
	APR-SEP	645	780	840	68	900	1050	1237
SPOKANE nr Post Falls (1,2)	APR-JUL	920	1500	1760	67	2020	2600	2627
	APR-SEP	950	1550	1820	67	2090	2690	2720

PANHANDLE REGION Reservoir Storage (1000 AF) - End of March					PANHANDLE REGION Watershed Snowpack Analysis - April 1, 1993			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HUNGRY HORSE	3451.0	699.0	1951.0	2046.0	Kootenai ab Bonners Ferry	44	93	64
FLATHEAD LAKE	1791.0	642.0	587.7	751.9	Moyie River	3	91	58
NOXON RAPIDS	335.0	322.8	320.8	231.3	Clark Fork River	72	104	67
PEND OREILLE	1561.3	620.8	638.4	813.7	Priest River	5	99	70
COEUR D'ALENE	238.5	225.5	168.7	170.1	Pend Oreille River	107	104	69
PRIEST LAKE	119.3	54.0	42.5	61.2	Rathdrum Creek	5	780	102
					Hayden Lake	2	2160	90
					Coeur d'Alene River	8	120	77
					St. Joe River	6	111	67
					Spokane River	21	149	78
					Palouse River	2	0	89

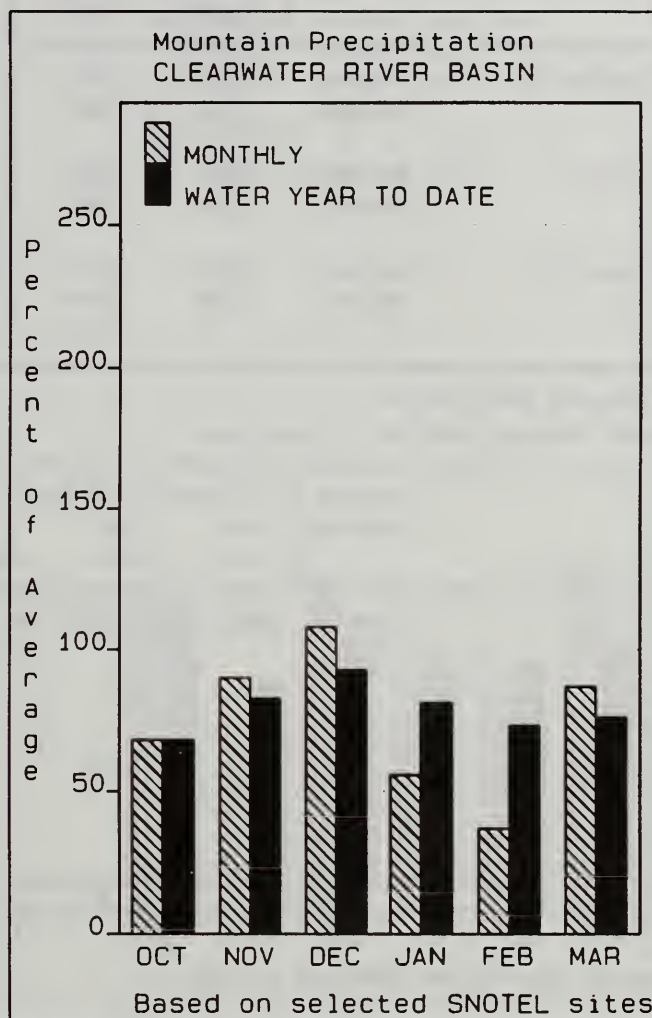
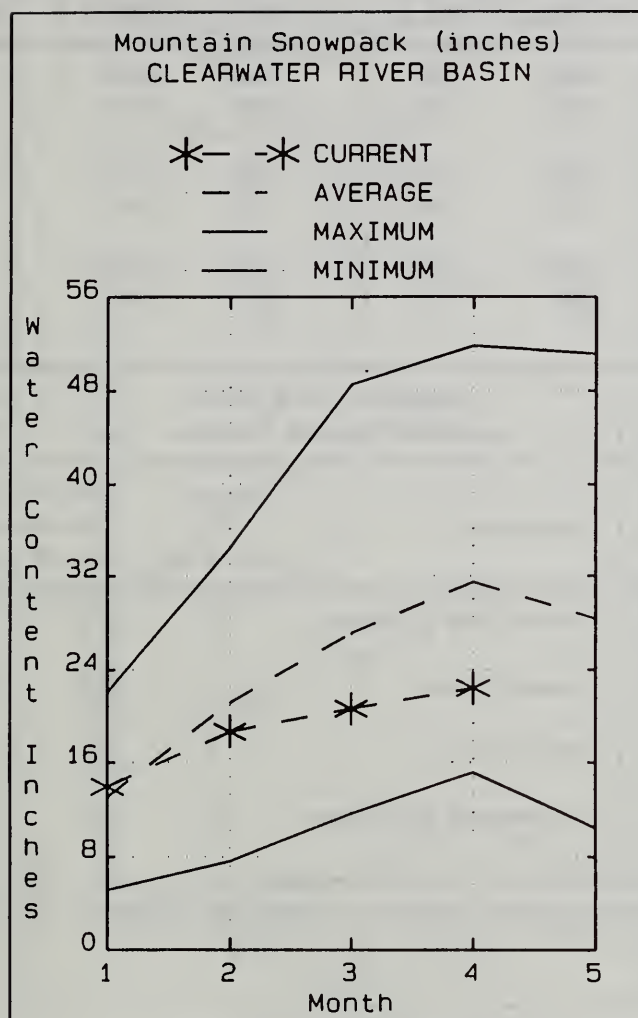
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

CLEARWATER RIVER BASIN

APRIL 1, 1993



WATER SUPPLY OUTLOOK

Idaho's Clearwater River basin is experiencing another dry year. Water year to date precipitation is 76% of average, the same as last year at this time. Snowpacks in the basin decreased 5-10 percentage points during March and now stand at 69% of average. Forecasts call for below normal flows for all streams in the area. Dworshak Reservoir is currently 83% full which is above average for this time of year. This season's water supply should be similar to last year's unless heavy spring rains augment the snowmelt runoff. River runners and other water users should plan for lower than normal peak flows and an early recession to low flow conditions.

CLEARWATER RIVER BASIN
Streamflow Forecasts - April 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
=====								
DWORSHAK RESERVOIR inflow (1)	APR-JUL	1330	1760	1950	72	2140	2570	2700
	APR-SEP	1410	1860	2070	72	2280	2730	2875
CLEARWATER at Orofino (1)	APR-JUL	2230	3100	3500	74	3900	4770	4718
	APR-SEP	2360	3280	3700	74	4120	5040	4976
CLEARWATER at Spalding (1,2)	APR-JUL	3980	5200	5760	76	6320	7540	7618
	APR-SEP	4200	5490	6080	76	6670	7960	8052

CLEARWATER RIVER BASIN Reservoir Storage (1000 AF) - End of March					CLEARWATER RIVER BASIN Watershed Snowpack Analysis - April 1, 1993			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DWORSHAK	3467.8	2893.5	3102.0	1996.2	North Fork Clearwater	13	110	69
					Lochsa River	4	103	60
					Selway River	7	125	72
					Clearwater Basin Total	22	114	69

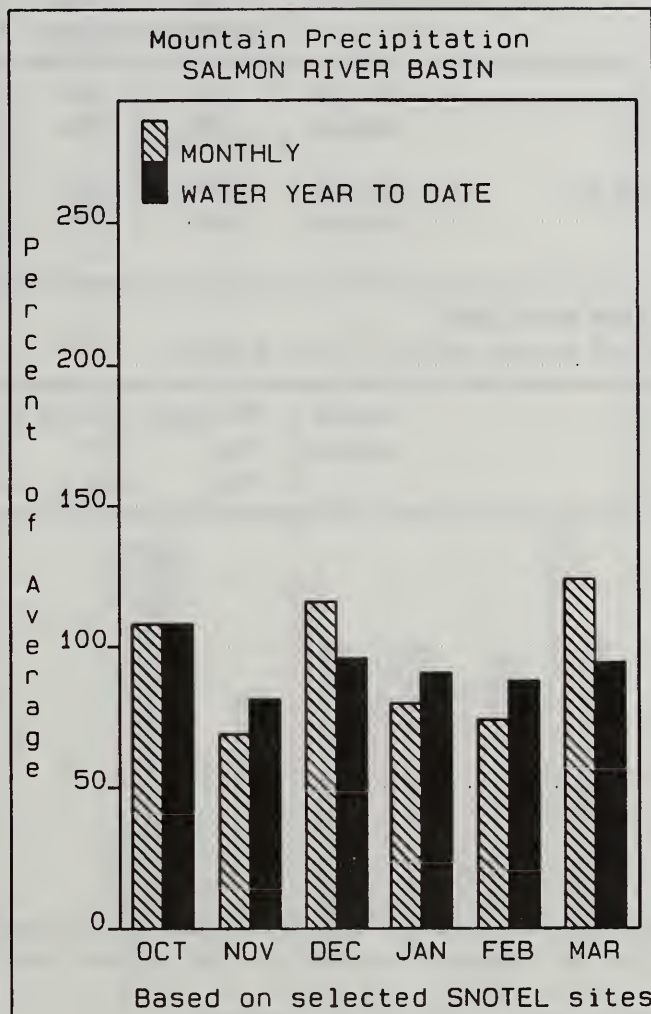
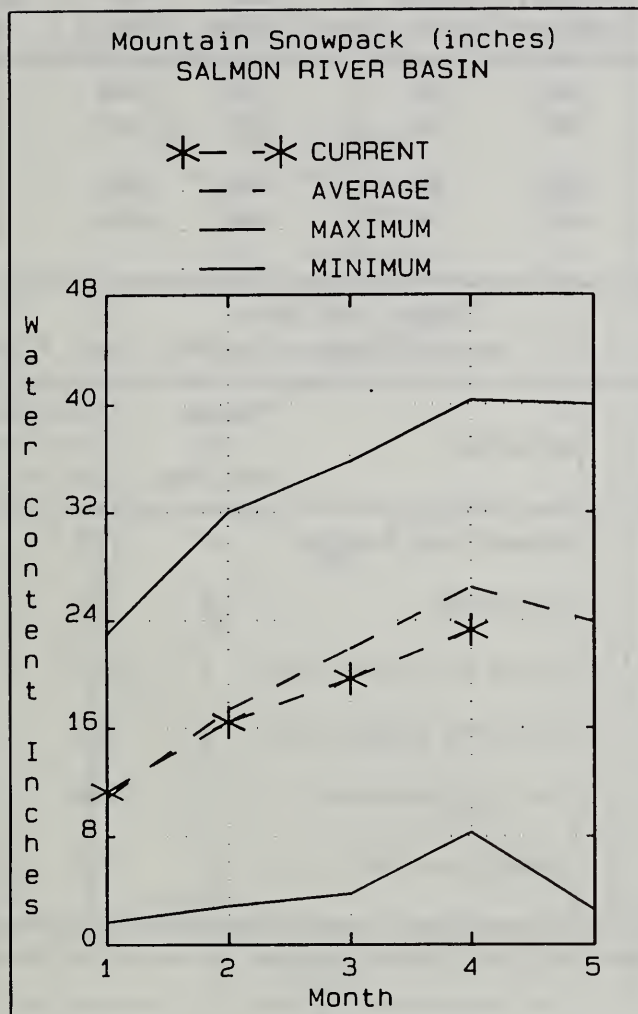
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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SALMON RIVER BASIN

APRIL 1, 1993



WATER SUPPLY OUTLOOK

Heavy precipitation in late March brought the water year total to near normal (94% of average). Low elevation snowpacks have started to melt while the higher elevations continue to increase. Overall, the snowpack in the Salmon basin changed little from last month and is now 86% of average. As a result of the previous six consecutive dry years, soil moisture and groundwater conditions may have an adverse impact on this year's snowmelt runoff. Streamflow forecasts decreased slightly from last month for the Salmon at White Bird and now call for 80% of average. Irrigators may experience late season low flows in the tributaries of the Salmon and Lemhi Rivers. Water supplies should be adequate along the main Salmon, however, and river runners should see some of the best flows of the last six years.

SALMON RIVER BASIN
Streamflow Forecasts - April 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
SALMON at Salmon (1)	APR-JUL	440	655	750	86	845	1060	869
	APR-SEP	515	765	880	86	995	1240	1019
SALMON at White Bird (1)	APR-JUL	3370	4330	4760	80	5190	6150	5956
	APR-SEP	3710	4770	5250	80	5730	6790	6602

SALMON RIVER BASIN Reservoir Storage (1000 AF) - End of March					SALMON RIVER BASIN Watershed Snowpack Analysis - April 1, 1993			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					Salmon River ab Salmon	10	158	92
					Lemhi River	10	107	77
					Middle Fork Salmon River	3	144	88
					South Fork Salmon River	3	141	90
					Little Salmon River	4	189	91
					Salmon Basin Total	30	140	86

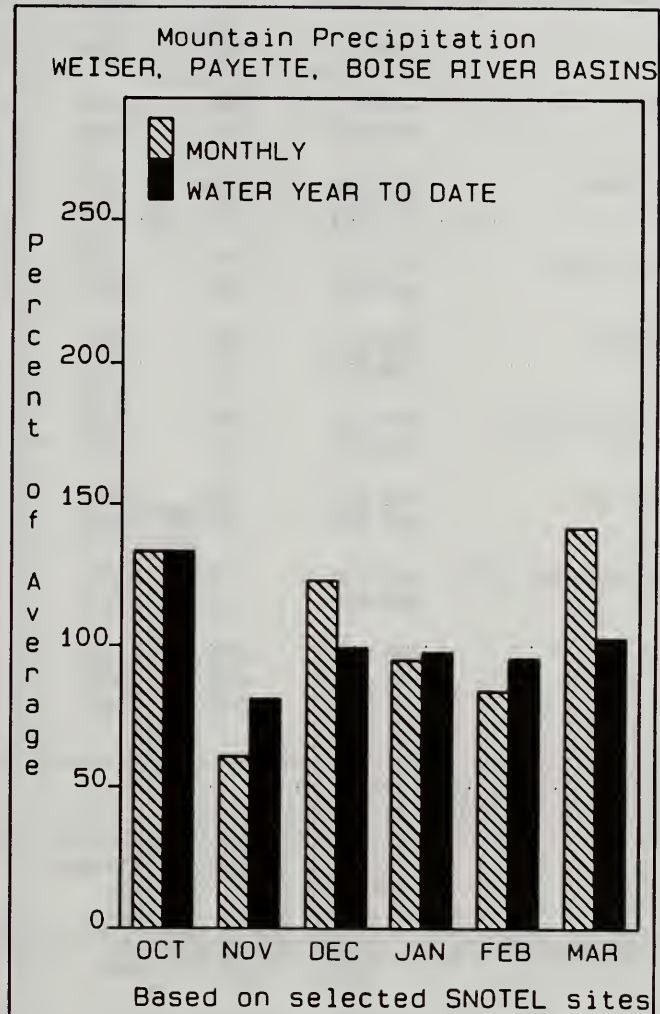
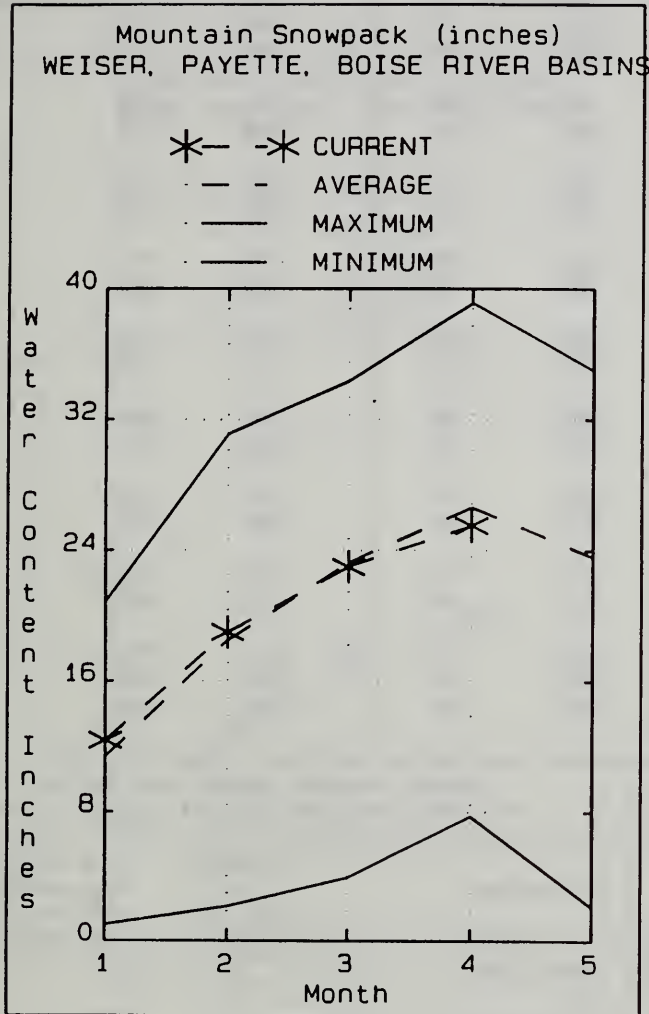
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WEISER, PAYETTE, BOISE RIVER BASINS

APRIL 1, 1993



WATER SUPPLY OUTLOOK

Heavy rainfall combined with snowmelt brought the Weiser River above flood stage several times in late March and early April, peaking at 21,900 cfs on March 24. March precipitation was 142% of average in the west central mountains, with some sites reporting twice their March normal. Warm rains melted much of the lower elevation snow in Mann Creek and the Weiser basin, bringing these watersheds closer to normal conditions for April 1. Currently, snowpacks are near average throughout the Weiser, Boise, and Payette River drainages, ranging from 90% of average on the S.F. Payette to 108% on the S.F. Boise. Dry soil and groundwater conditions could have an adverse impact on snowmelt runoff this year. Consequently, forecasts call for slightly below normal runoff for streams in this area. Reservoir storage is near average in the Payette basin, but still below average in the Boise. The Payette system is expected to fill, and the Boise should nearly fill with the possible exception of Anderson Reservoir which is very low. Adequate water supplies are expected for all uses in the Weiser, Boise, and Payette basins this year -- a dramatic change from last year.

WEISER, PAYETTE, BOISE RIVER BASINS
Streamflow Forecasts - April 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
WEISER nr Weiser (1)	APR-JUL	130	250	305	79	360	480	386
	APR-SEP	141	270	328	79	385	515	415
SF PAYETTE at Lowman	APR-JUL	365	390	410	95	430	455	432
	APR-SEP	415	445	465	95	485	515	488
DEADWOOD RESERVOIR INFLOW	APR-JUL	100	118	125	92	132	149	135
	APR-SEP	114	125	132	92	139	150	143
NF PAYETTE at Cascade (1,2)	APR-JUL	335	405	440	88	475	545	498
	APR-SEP	350	430	465	87	500	585	533
NF PAYETTE nr Banks (2)	APR-JUL	430	505	560	86	615	690	648
	APR-SEP	450	535	590	86	645	730	690
PAYETTE nr Horseshoe Bend (1,2)	APR-JUL	950	1250	1390	86	1530	1830	1618
	APR-SEP	1050	1380	1530	87	1680	2010	1755
BOISE nr Twin Springs (1)	APR-JUL	485	565	600	95	635	720	631
	APR-SEP	540	615	650	95	685	760	686
SF BOISE at Anderson Rnch Dm (1,2)	APR-JUL	410	485	515	95	545	620	544
	APR-SEP	445	520	553	95	585	660	582
BOISE nr Boise (1,2)	APR-JUN	1030	1150	1210	96	1270	1390	1264
	APR-JUL	1040	1270	1340	94	1410	1630	1421
	APR-SEP	1200	1380	1460	95	1540	1720	1535

WEISER, PAYETTE, BOISE RIVER BASINS
Reservoir Storage (1000 AF) - End of March

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
MANN CREEK	11.1	8.5	8.4	8.7
CASCADE	703.2	362.7	448.7	377.6
DEADWOOD	161.9	62.8	60.3	90.8
ANDERSON RANCH	464.2	44.8	85.9	278.1
ARROWROCK	286.6	214.9	146.1	227.8
LUCKY PEAK	293.2	162.0	180.4	153.2
LAKE LOWELL (DEER FLAT)	177.1	97.4	63.3	152.9

WEISER, PAYETTE, BOISE RIVER BASINS
Watershed Snowpack Analysis - April 1, 1993

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
Mann Creek	2	700	101
Weiser River	5	309	94
North Fork Payette	8	173	91
South Fork Payette	5	169	90
Payette Basin Total	14	177	92
Middle & North Fork Boise	7	218	100
South Fork Boise River	8	226	108
Mores Creek	5	320	101
Boise Basin Total	16	254	102
Canyon Creek	1	0	125

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

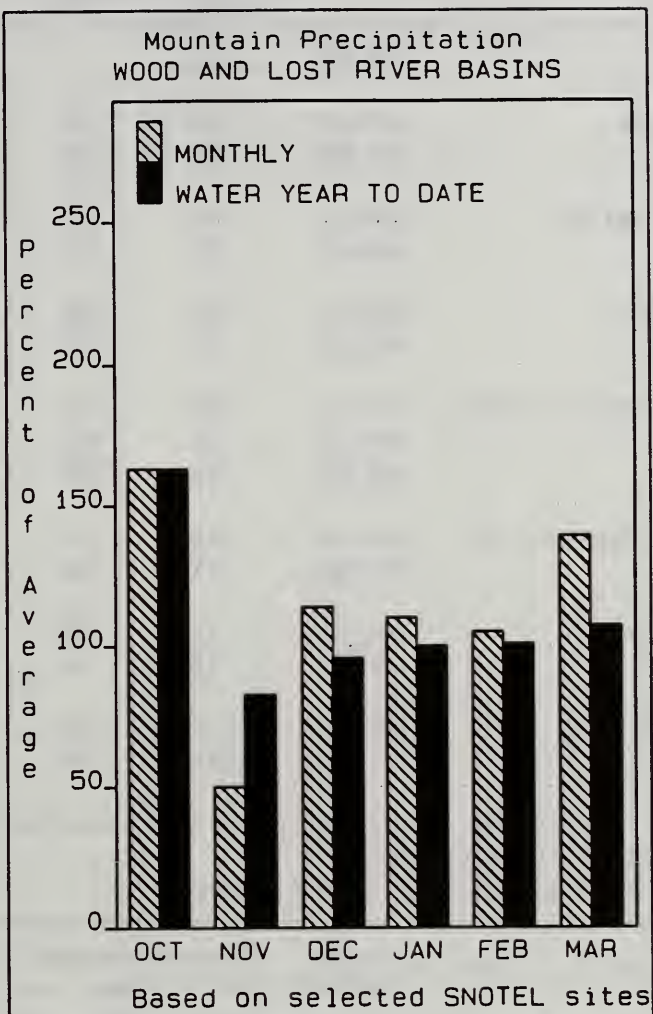
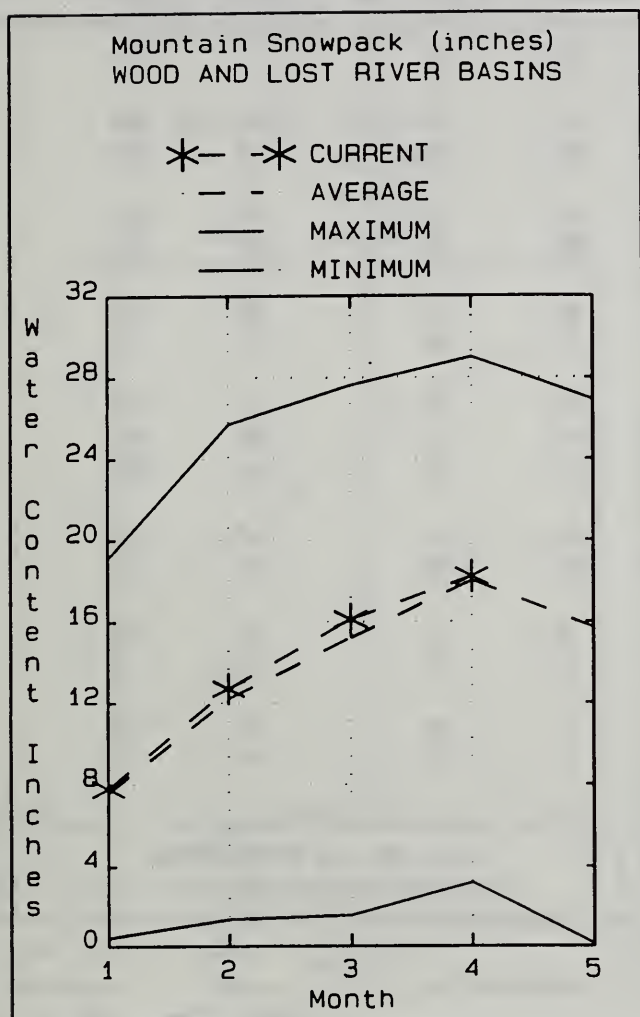
The average is computed for the 1961-1990 base period.

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(2) - The value is natural flow - actual flow may be affected by upstream water management.

WOOD and LOST RIVER BASINS

APRIL 1, 1993



WATER SUPPLY OUTLOOK

The Wood and Lost River basins received heavy precipitation during March, bringing the water year total to 107% of average. Snowpacks remain above average in Camas Creek (122% of average) and the Big Wood River basin (107% of average). Due to the abundant low elevation snowpack, the potential for spring flooding still exists on the Big Wood River if heavy rainfall accompanies snowmelt. Lower elevations in the Little Wood and Lost River basins melted slightly, bringing the snowpack closer to normal levels for April 1. In spite of the excellent snowpack, dry soil and groundwater conditions are expected to adversely impact snowmelt runoff. Consequently, streamflow forecasts call for near to slightly below average volumes this summer for the Wood and Lost Rivers. Reservoir storage is on the rise with Magic, Little Wood, and Mackay reservoirs increasing in storage during March and now reporting 23%, 74% and 60% of useable capacity, respectively. Water supplies should be adequate this year in the Wood and Lost river basins; wise water use will help restore the carryover supply for next year.

WOOD AND LOST RIVER BASINS
Streamflow Forecasts - April 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		=====		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
BIG WOOD AT HAILEY	APR-SEP	174		260	91		345	286
BIG WOOD nr Bellevue	APR-JUL	118	148	168	92	188	220	183
	APR-SEP	124	156	177	90	198	230	197
BIG WOOD bl Magic Dam (2)	APR-JUL	192	240	273	93	305	355	294
	APR-SEP	155	245	280	91	315	395	309
LITTLE WOOD nr Carey	APR-JUL	69	80	88	96	96	107	92
	APR-SEP	69	85	94	95	103	119	99
BIG LOST at Howell Ranch nr Chilly	APR-JUN	107	122	133	94	144	159	141
	APR-JUL	134	156	170	94	184	205	181
	APR-SEP	154	178	194	94	210	235	206
BIG LOST bl Mackay Reservoir (2)	APR-JUL	102	121	134	89	147	166	150
	APR-SEP	111	148	162	89	176	210	182
LITTLE LOST bl Wet Ck	APR-JUL	23	28	30	98	33	38	31
	APR-SEP	28	34	38	97	42	48	39
LITTLE LOST nr Howe	APR-JUL	26	29	31	95	34	37	33
	APR-SEP	34	38	41	95	44	48	43

WOOD AND LOST RIVER BASINS Reservoir Storage (1000 AF) - End of March					WOOD AND LOST RIVER BASINS Watershed Snowpack Analysis - April 1, 1993			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
MAGIC	191.5	44.5	34.1	117.4	Big Wood ab Magic	8	182	104
LITTLE WOOD	30.0	22.2	22.9	18.4	Camas Creek	4	838	122
MACKAY	44.4	26.8	28.6	33.3	Big Wood Basin Total	12	223	107
					Little Wood River	4	197	105
					Fish Creek	3	303	98
					Big Lost River	7	160	102
					Little Lost River	4	144	96

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

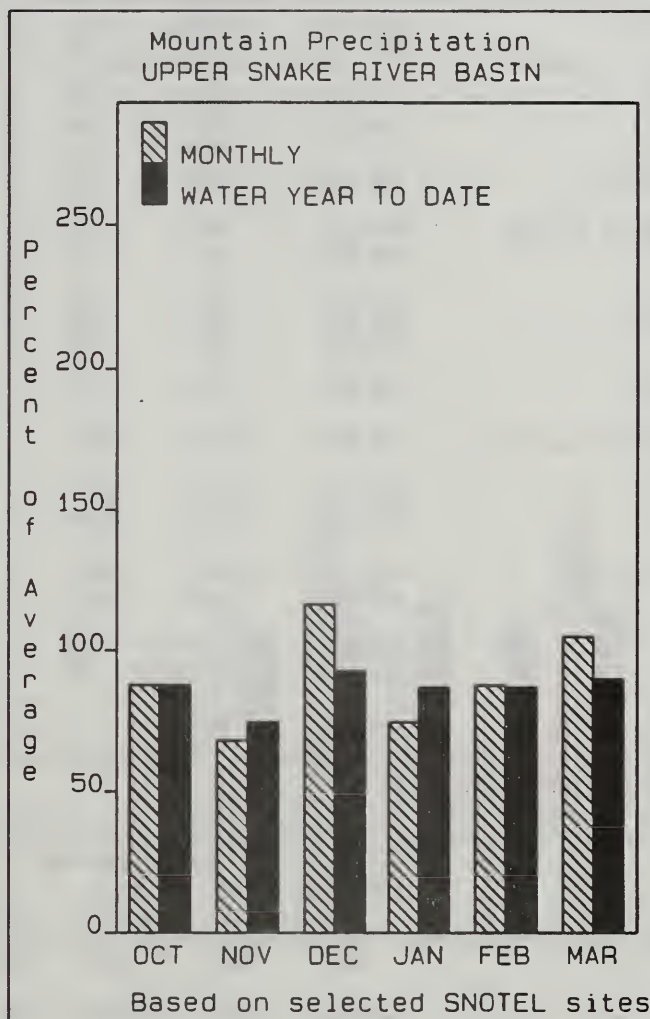
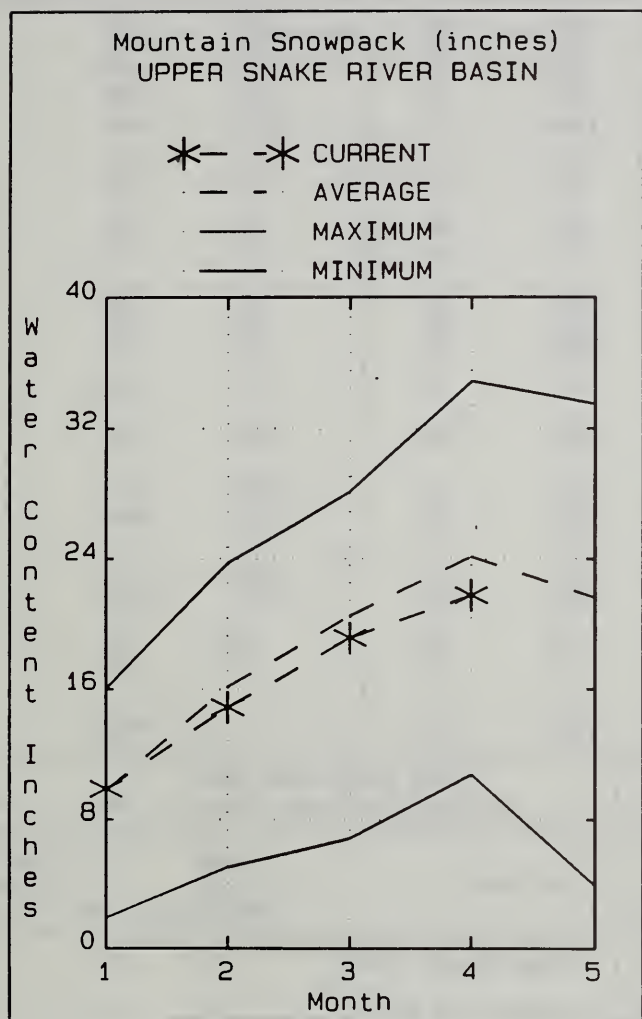
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

UPPER SNAKE RIVER BASIN

APRIL 1, 1993



WATER SUPPLY OUTLOOK

March precipitation was above normal throughout the upper Snake River basin. Warm temperatures and rain in the valleys started melting the snowpack in the lower elevations while colder temperatures kept snow falling at the higher elevations. The snowpack in the lower elevation drainages of Willow Creek and the Portneuf and Blackfoot Rivers decreased 10-20 percentage points during March and are now near to slightly below normal for April 1. Snowpacks in the higher elevation basins of the Snake River in Wyoming range from 80-90% of average. With below normal snowpacks in the high country, streamflow forecasts call for below normal runoff this summer. This year's flows, however, should be considerably better than last summer's near record low flows. Combined useable storage for eight major reservoirs in the region is 52% of capacity, while last year on March 31 the system was 80% full. Current forecasts indicate that the Snake system may not completely fill, but an adequate irrigation supply is expected. Irrigation demand should be delayed due to the wet soil moisture conditions this year. All things considered, water supplies should be adequate in the Snake River basin this year.

UPPER SNAKE RIVER BASIN
Streamflow Forecasts - April 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		=====		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
HENRYS FORK nr Ashton	APR-JUL	365	410	445	82	480	525	544
	APR-SEP	500	555	595	82	635	690	730
HENRYS FORK nr Rexburg	APR-JUL	780	880	946	77	1010	1180	1228
	APR-SEP	945	1120	1190	77	1270	1460	1551
FALLS RIVER nr Squirrel	APR-JUL	235	280	295	81	310	360	364
TETON ab S Leigh Ck nr Driggs	APR-JUL	98	118	131	86	144	164	153
	APR-SEP	131	155	171	86	187	210	199
TETON nr St. Anthony	APR-JUL	250	295	323	86	350	395	375
	APR-SEP	300	345	380	84	415	460	454
SNAKE nr Moran (1,2)	APR-SEP	545	650	695	80	740	845	869
PALISADES RESERVOIR inflow (1,2)	APR-SEP	2220	2780	2970	79	3160	3730	3763
SNAKE nr Heise (2)	APR-JUL	2050	2450	2730	79	3010	3410	3451
	APR-SEP	2410	2890	3210	79	3530	4010	4049
SNAKE nr Blackfoot (1,2)	APR-JUL	2800	3250	3550	80	3850	4310	4444
	APR-SEP	3190	4010	4390	80	4770	5590	5482
PORTNEUF at Topaz	APR-JUL	48	58	65	90	72	82	72
	APR-SEP	63	76	84	90	92	105	93
AMERICAN FALLS RESV INFLOW	APR-JUL	890		1960	64		3040	3066

UPPER SNAKE RIVER BASIN
Reservoir Storage (1000 AF) - End of March

UPPER SNAKE RIVER BASIN
Watershed Snowpack Analysis - April 1, 1993

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HENRYS LAKE	90.4	62.0	90.4	80.1	Camas-Beaver Creeks	4	155	98
ISLAND PARK	135.2	92.4	109.6	119.3	Henrys Fork River	12	132	92
GRASSY LAKE	15.2	13.2	12.4	11.2	Teton River	8	151	93
JACKSON LAKE	847.0	178.0	637.1	473.2	SNAKE above Jackson Lake	10	142	82
PALISADES	1355.5	512.0	1003.7	968.2	Gros Ventre River	4	163	89
RIRIE	96.5	32.7	52.9	53.1	Hoback River	6	200	89
BLACKFOOT	348.7	63.2	125.1	260.7	Greys River	5	182	90
AMERICAN FALLS	1672.6	1429.1	1476.4	1452.5	Salt River	5	163	88
					SNAKE above Palisades	32	164	88
					Willow Creek	7	323	95
					Blackfoot River	5	356	90
					Portneuf River	6	290	100
					SNAKE abv American Falls	47	186	90

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

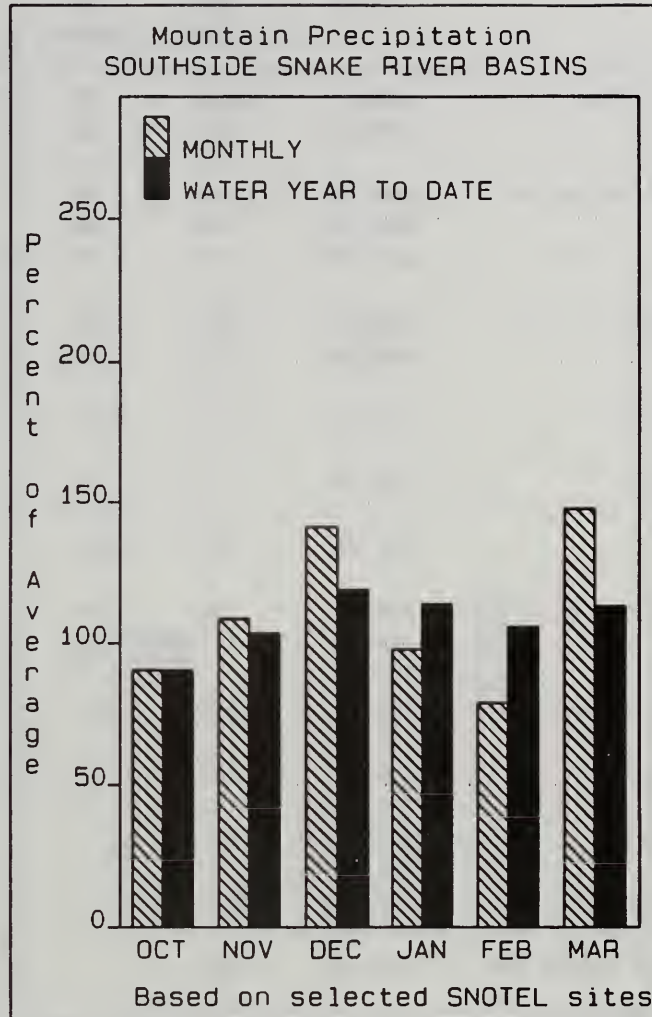
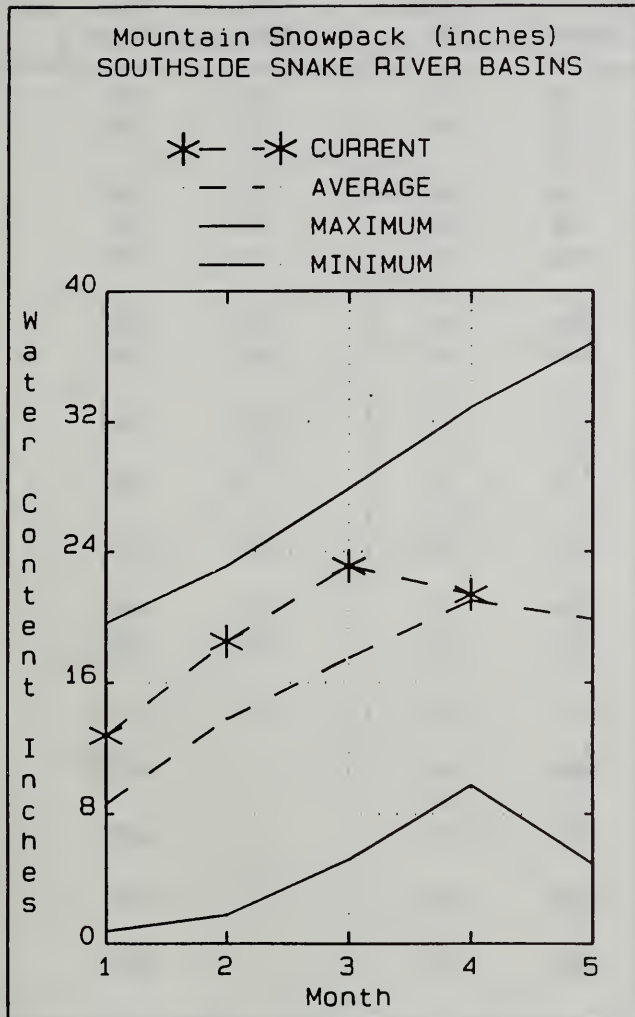
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

SOUTHSIDE SNAKE RIVER BASINS

APRIL 1, 1993



WATER SUPPLY OUTLOOK

Warm temperatures and rain melted most of the lower elevation snowpack south of the Snake River during March. Precipitation for the month was an impressive 148% of average and now stands at 113% for the water year. Snowpacks in the Salmon Falls and Bruneau basins decreased 40 percentage points from March 1 and are now slightly below normal. The Owyhee basin, which had a tremendous snowpack of 166% of average last month, is now 90% of average. A combination of snowmelt and warm, heavy rains in the basin yielded a peak flow of 51,400 cfs for the Owyhee at Rome -- a new record! As a result, Owyhee reservoir nearly filled in three weeks time and reached full capacity in early April. The reservoir was almost empty at the beginning of March, preventing serious downstream flooding during the high flow period later in the month. Streamflow forecasts for the Owyhee River have been revised and now call for 76% of average for the April-July period. Salmon Falls Creek and the Bruneau River are expected to yield near normal flows. Oakley and Salmon Falls reservoirs are currently reporting around 20% of useable capacity. This season's water supply should be adequate to meet most users needs this summer, a dramatic turnaround from last year.

SOUTHSIDE SNAKE RIVER BASINS
Streamflow Forecasts - April 1, 1993

		<<===== Drier ===== Future Conditions ===== Wetter =====>>							
Forecast Point	Forecast Period	===== Chance Of Exceeding * =====						30-Yr Avg. (1000AF)	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)		
=====									
OAKLEY RESERVOIR inflow	APR-JUL	17.0	23	28	96	32	39	29	
	APR-SEP	18.0	26	30	95	35	43	32	
SALMON FALLS CK nr San Jacinto	APR-JUN	44	63	75	100	87	106	75	
	APR-JUL	46	66	80	100	94	114	80	
	APR-SEP	49	70	84	100	98	120	84	
BRUNEAU nr Hot Spring	APR-JUL	127	165	190	91	215	255	209	
	APR-SEP	133	172	199	90	225	265	221	
OWYHEE nr Gold Ck (2)	APR-JUL	10.0	17.0	22	76	27	34	29	
OWYHEE nr Owyhee (2)	APR-JUL	31	52	65	76	79	100	86	
OWYHEE nr Rome	APR-JUL	105	220	300	80	380	495	377	
OWYHEE RESERVOIR inflow (1,2)	APR-JUL	96	215	295	76	375	488	390	
	APR-SEP	115	235	318	76	400	520	418	
SUCCOR CK nr Jordan Valley	APR-JUL	4.3	8.1	10.7	111	13.3	17.1	9.6	
SNAKE RIVER at King Hill	APR-JUL	635		1600	55		2550	2896	
SNAKE RIVER near Murphy	APR-JUL	625		1630	55		2620	2980	
SNAKE RIVER at Weiser	APR-JUL	1530		3260	60		5030	5465	
SNAKE RIVER at Hells Canyon Dam	APR-JUL	1900		3870	63		5820	6129	

SOUTHSIDE SNAKE RIVER BASINS Reservoir Storage (1000 AF) - End of March					SOUTHSIDE SNAKE RIVER BASINS Watershed Snowpack Analysis - April 1, 1993			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
OAKLEY	77.4	16.8	13.9	34.0	Raft River	6	242	120
SALMON FALLS	182.6	34.2	22.2	62.3	Goose-Trapper Creeks	5	268	105
WILDHORSE RESERVOIR	71.5	17.1	10.0	38.2	Salmon Falls Creek	6	231	93
OWYHEE	715.0	647.4	170.2	579.0	Bruneau River	8	250	83
BROWNLEE	1419.3	958.3	942.1	449.1	Owyhee Basin Total	20	816	90

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

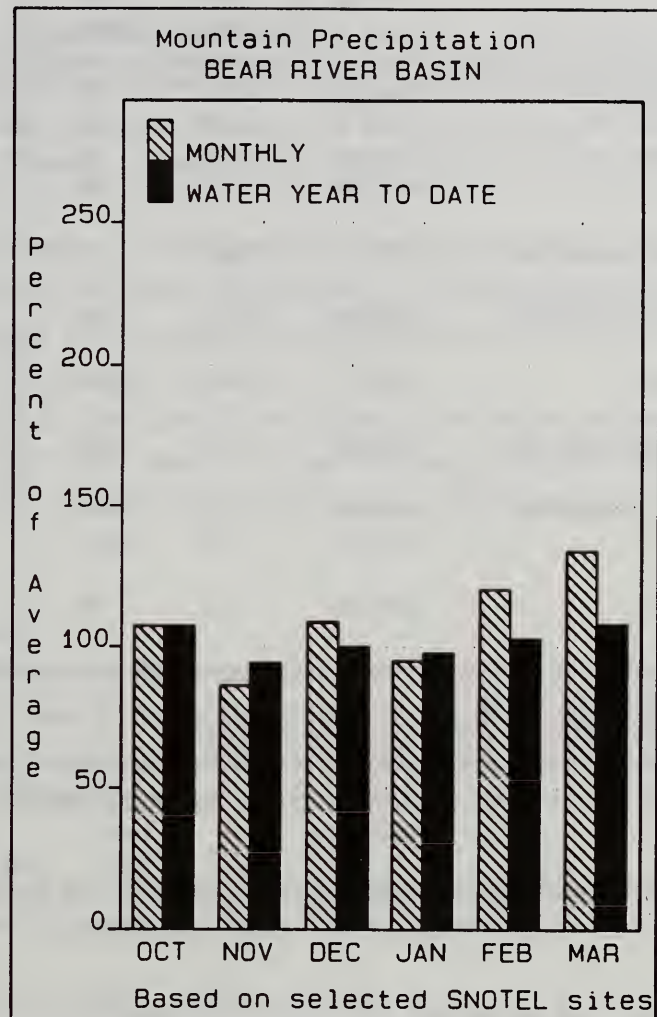
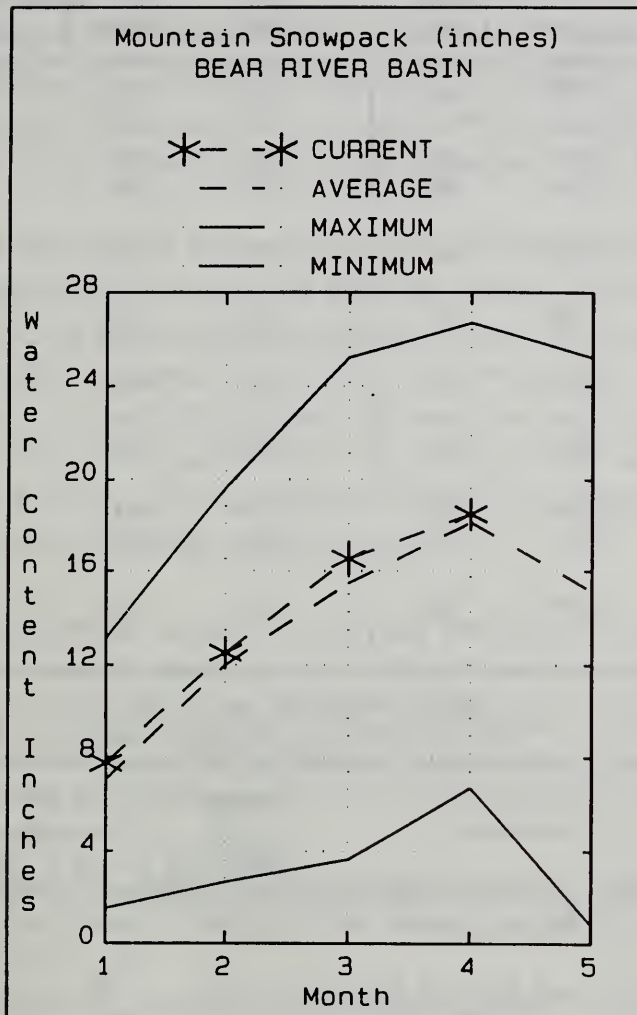
The average is computed for the 1961-1990 base period.

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BEAR RIVER BASIN

APRIL 1, 1993



WATER SUPPLY OUTLOOK

Mountain precipitation in the Bear River area was 134% of average during March, bringing the water year total to just above normal. Snowpack changes were variable during the month with basins to the south (Mink and Malad) decreasing slightly and basins to the north (Montpelier, Smith, and Thomas Forks) increasing slightly. Overall, the Bear River basin is reporting normal snowpack conditions for April 1. Dry soil moisture and groundwater conditions from the previous six dry years could have an adverse impact on snowmelt runoff this year. Streamflow forecasts call for 80-85% of average flows for streams in the Bear River area. Reservoir storage continues to be a critical factor in terms of water supply in this area; Montpelier Creek Reservoir is 28% of useable capacity while Bear Lake is only 19% of useable capacity. As a result of low reservoir storage and below normal streamflow forecasts, water shortages are possible once again. Water users should stay in contact with their local irrigation district for more information.

BEAR RIVER BASIN
Streamflow Forecasts - April 1, 1993

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		===== Chance Of Exceeding * =====						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
=====								
BEAR RIVER nr Randolph	APR-JUL	24	75	110	84	145	196	131
SMITHS FORK nr Border, WY	APR-JUL	64	78	87	85	96	110	102
	APR-SEP	74	89	100	85	111	126	118
THOMAS FORK nr Wy-Id Stateline	APR-JUL	16.0	23	27	82	31	38	33
THOMAS FORK nr WY-ID Stateline	APR-SEP	17.0	24	29	81	34	41	36
BEAR RIVER near Harer	APR-SEP	119	220	285	83	350	450	345
BEAR RIVER blw Stewart Dam (2)	APR-SEP	147	205	245	82	285	345	298
MONTPELIER CREEK nr Montpelier	APR-JUL	6.4	8.8	10.4	85	12.0	14.4	12.2
	APR-SEP	7.3	10.0	11.9	84	13.8	16.5	14.2
CUB RIVER nr Preston	APR-JUL	31	36	40	85	44	49	47

BEAR RIVER BASIN
Reservoir Storage (1000 AF) - End of March

BEAR RIVER BASIN
Watershed Snowpack Analysis - April 1, 1993

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
WOODRUFF NARROWS	57.3	24.3	50.8	---	Smiths & Thomas Forks	4	150	94
WOODRUFF CREEK	4.0	2.0	6.9	---	Bear River ab WY-ID line	10	186	102
BEAR LAKE	1421.0	272.2	505.8	1002.1	Montpelier Creek	2	267	90
MONTPELIER CREEK	4.0	1.1	1.6	1.6	Mink Creek	4	254	102
					Cub River	3	272	105
					Bear River ab ID-UT line	20	209	101
					Malad River	3	424	102

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Interpreting Streamflow Forecasts

Introduction

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

Most Probable (50 Percent Chance of Exceeding) Forecast. This forecast is the best estimate of streamflow volume that can be produced given current conditions and based on the outcome of similar past situations. There is a 50 percent chance that the streamflow volume will exceed this forecast value. There is a 50 percent chance that the streamflow volume will be less than this forecast value.

The most probable forecast will rarely be exactly right, due to errors resulting from future weather conditions and the forecast equation itself. This does not mean that users should not use the most probable forecast; it means that they need to evaluate existing circumstances and determine the amount of risk they are willing to take by accepting this forecast value.

To Decrease the Chance of Having Too Little Water

If users want to make sure there is enough water available for their operations, they might determine that a 50 percent chance of the streamflow volume being lower than the most probable forecast is too much risk to take. To reduce the risk of not having enough water available during the forecast period, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded (or possibly some point in-between). These include:

70 Percent Chance of Exceeding Forecast. There is a 70 percent chance that the streamflow volume will exceed this forecast value. There is a 30 percent chance the streamflow volume will be less than this forecast value.

90 Percent Chance of Exceeding Forecast. There is a 90 percent chance that the streamflow volume will exceed this forecast value. There is a 10 percent chance the streamflow volume will be less than this forecast value.

To Decrease the Chance of Having Too Much Water

If users want to make sure they don't have too much water, they might determine that a 50 percent chance of the streamflow being higher than the most probable forecast is too much of a risk to take. To reduce the risk of having too much water available during the forecast period, users can base their operational decisions on one of the forecasts with a smaller chance of being exceeded. These include:

30 Percent Chance of Exceeding Forecast. There is a 30 percent chance that the streamflow volume will exceed this forecast value. There is a 70 percent chance the streamflow volume will be less than this forecast value.

10 Percent Chance of Exceeding Forecast. There is a 10 percent chance that the streamflow volume will exceed this forecast value. There is a 90 percent chance the streamflow volume will be less than this forecast value.

Using the forecasts—an example

Using the Most Probable Forecast. Using the example forecasts shown below, users can reasonably expect 36,000 acre-feet to flow past the gaging station on the Mary's River near Deeth between March 1 and July 31.

Using the Higher Exceedance Forecasts. If users anticipate a somewhat drier trend in the future (monthly and seasonal weather outlooks are available from the National Weather Service every two weeks), or if they are operating at a level where an unexpected shortage of water could cause problems, they might want to plan on receiving only 20,000 acre-feet (from the 70 percent chance of exceeding forecast). In seven out of ten years with similar conditions, streamflow volumes will exceed the 20,000 acre-foot forecast.

If users anticipate extremely dry conditions for the remainder of the season, or if they determine the risk of using the 70 percent chance of exceeding forecast is too great, then they might plan on receiving only 5000 acre-feet (from the 90 percent chance of exceeding forecast). Nine out of ten years with similar conditions, streamflow volumes will exceed the 5000 acre-foot forecast.

Using the Lower Exceedance Forecasts. If users expect wetter future conditions, or if the chance that five out of every ten years with similar conditions would produce streamflow volumes greater than 36,000 acre-feet was more than they would like to risk, they might plan on receiving 52,000 acre-feet (from the 30 percent chance of exceeding forecast) to minimize potential flooding problems. Three out of ten years with similar conditions, streamflows will exceed the 52,000 acre-foot forecast.

In years when users expect extremely wet conditions for the remainder of the season and the threat of severe flooding and downstream damage exists, they might choose to use the 76,000 acre-foot (10 percent chance of exceeding) forecast for their water management operations. Streamflow volumes will exceed this level only one year out of ten.

UPPER HUMBOLDT RIVER BASIN										
STREAMFLOW FORECASTS										
FORECAST POINT	FORECAST PERIOD	<-----DRIER----- FUTURE CONDITIONS -----WETTER----->								
		----- Chance of Exceeding -----								
		90%	70%	50% (Most Probable)		30%	10%	25 YR.		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)		
MARY'S RIVER nr Deeth	MAR-JUL	5.0	20.0		36	77		52	76	47
	APR-JUL	8.0	17.0		31	74		45	67	42
LAMOILLE CREEK nr Lamoille	MAR-JUL	6.0	16.0		24	79		32	43	31
	APR-JUL	4.0	15.0		22	75		30	41	30
NF HUMBOLDT RIVER at Devils Gate	MAR-JUL	6.0	12.0		43	73		74	121	59

For more information concerning streamflow forecasting ask your local SCS field office for a copy of "A Field Office Guide for Interpreting Streamflow Forecasts".

IDAHO MOUNTAIN SNOWPACK

APRIL 1, 1993

0 25 50 75 100 MI

LEGEND



Much Above Average
more than 130 percent



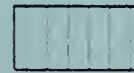
Above Average
110-130 percent



Near Average
90-110 percent

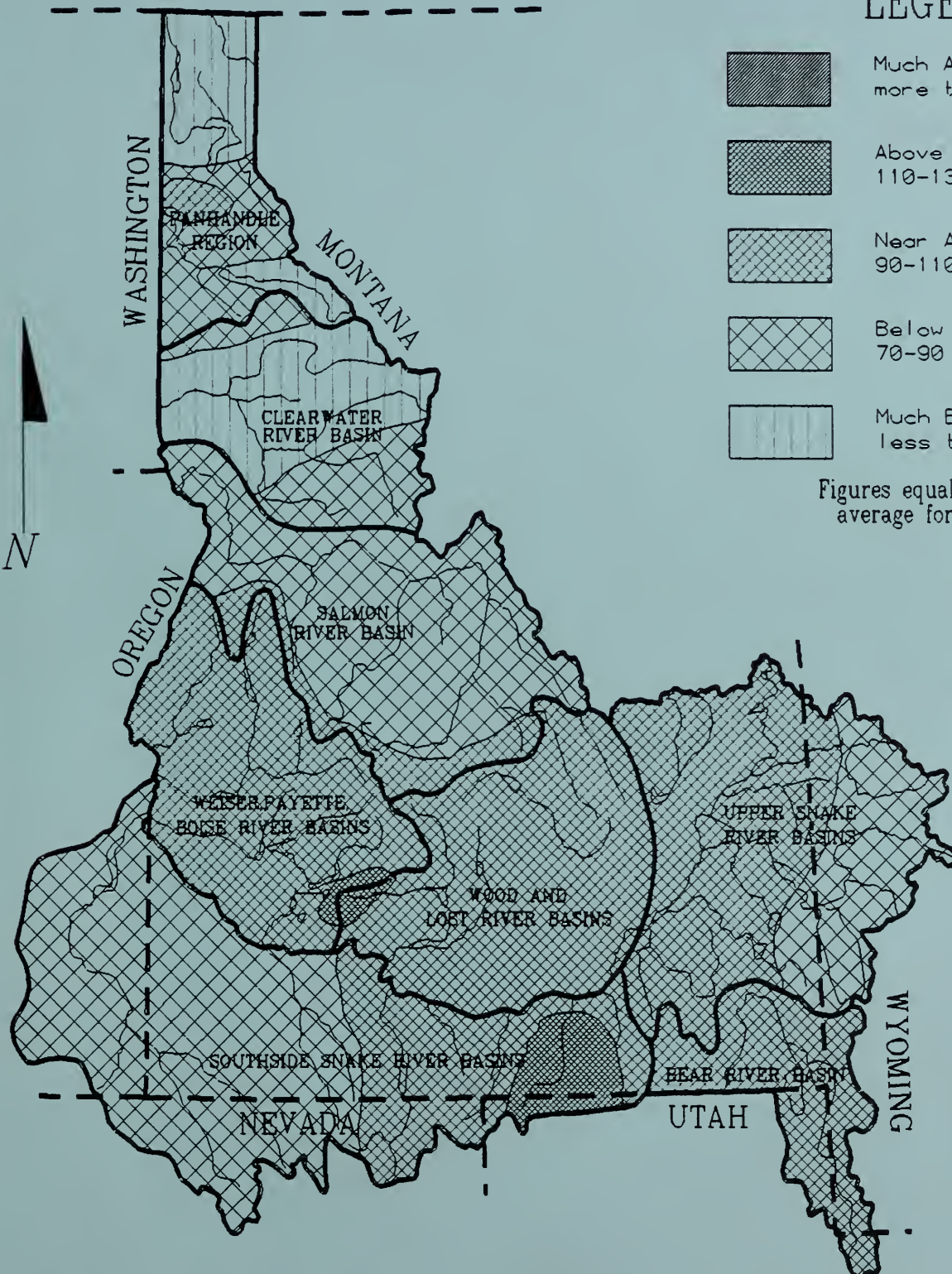


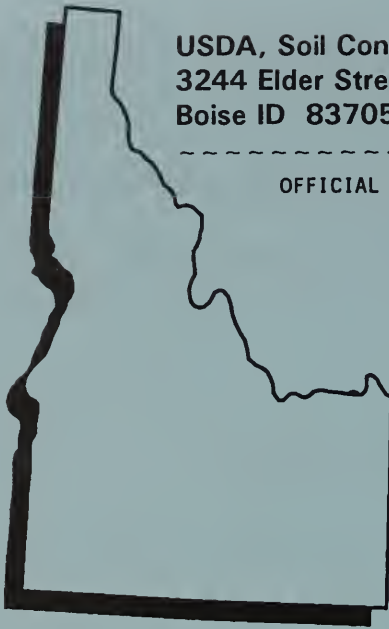
Below Average
70-90 percent



Much Below Average
less than 70 percent

Figures equal percent of
average for drainage.

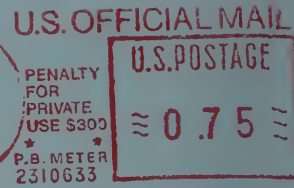




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SOIL CONSERVATION SERVICE

In addition to basin outlook reports, a Water Supply Forecast for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209-3489.